

Cellular and Molecular Neurobiology—Volume 3, 1983

Cellular and Molecular Neurobiology publishes original research articles concerned with the analysis of neuronal and brain function at the cellular and subcellular levels. The journal welcomes articles utilizing anatomic, physiologic, pharmacologic, or biochemical approaches to the study of neuronal function and oriented to the analysis of elementary mechanisms. Studies of isolated mammalian tissues, and intact animals, with investigation aimed at the molecular mechanisms or neuronal responses at the level of single cells, are accepted for publication. The journal also presents studies of the effects of neurons on other organ systems, such as analysis of the electrical or biochemical response to neurotransmitters or neurohormones on smooth muscle or gland cells.

Cover: Pyramidal cell neuron filled with horseradish peroxidase from the cortex of cat. Courtesy of Dr. Charles D. Woody.

EDITOR

David O. Carpenter, New York State Department of Health, Albany, New York

EDITORIAL ADVISORS

Julius Axelrod, National Institutes of Mental Health, Bethesda, Maryland

Marshall Nirenberg, National Institutes of Health, Bethesda, Maryland

EDITORIAL BOARD

Paul R. Adams, State University of New York, Stony Brook, New York

Per Andersen, Universitetet i Oslo, Oslo, Norway

Lugo Arechiga, Instituto Politecnico Nacional, Mexico City, Mexico

Boyd J. Brinley, Jr., National Institutes of Health, Bethesda, Maryland

David A. Brown, University of London School of Pharmacy, London, England

Alan M. H. Bush, School of Veterinary Science, Bristol, England

Edward Catapane, City University of New York, Brooklyn, New York

William Catterall, University of Washington, Seattle, Washington

John Connor, Bell Laboratories, Murray Hill, New Jersey

Carl W. Cotman, University of California, Irvine, California

John W. Daly, National Institutes of Health, Bethesda, Maryland

Roger O. Eckert, University of California at Los Angeles, Los Angeles, California

Robert W. Gage, University of New South Wales, New South Wales, Australia

Arnold Gainer, National Institutes of Health, Bethesda, Maryland

Michael J. Greenberg, The Florida State University, Tallahassee, Florida

Boyd Greene, New York University School of Medicine, New York, New York

Edmut Haas, Neurochirurgische Universitätsklinik, Zurich, Switzerland

James Haley, Albert Einstein College of Medicine, Bronx, New York

Henry Haley, The Rockefeller University, New York, New York

Richard Hammerschlag, City of Hope National Medical Center, Durate, California

Andras Hiripi, Hungarian Academy of Sciences, Tihany, Hungary

Allan Hobson, Harvard Medical School, Boston, Massachusetts

Niel Johnston, Baylor College of Medicine, Houston, Texas

John Kebedian, National Institutes of Health, Bethesda, Maryland

Yuri Khodorov, Vishnevsky Surgery Institute, Moscow, USSR

Michel Lazdunski, Universite de Nice, Nice, France

Eero Y. H. Lagerspetz, University of Turku, Turku, Finland

Yury Magazanik, Academy of Sciences of the USSR, Leningrad, USSR

Donald A. McAfee, City of Hope National Medical Center, Duarte, California

Fredrick A. Miles, National Institutes of Health, Bethesda, Maryland

William Osborne, University of Oxford, Oxford, England

David Pasternak, Memorial Sloan-Kettering Cancer Center, New York, New York

Donald B. Pert, National Institute of Mental Health, Bethesda, Maryland

Yehuda Rahamimoff, Hebrew University, Hadassah Medical School, Jerusalem, Israel

Thomas S. Reese, National Institutes of Health, Bethesda, Maryland

Roberto Rudomin, Instituto Politecnico Nacional, Mexico City, Mexico

Roberto M. Saavedra, National Institute of Mental Health, Bethesda, Maryland

Andreas Sachs, State University of New York, Buffalo, New York

Lev N. Sakharov, Academy of Sciences of the USSR, Moscow, USSR

Robert M. Salzberg, University of Pennsylvania School of Dental Medicine, Philadelphia, Pennsylvania

George B. Stefano, State University of New York, Old Westbury, New York

Yevgeny Taub, Centre National de la Recherche Scientifique, Paris, France

Yoshiichi Terashima, Tokyo Medical and Dental University, Tokyo, Japan

Cellular and Molecular Neurobiology is published quarterly by Plenum Publishing Corporation, 233 Spring Street, New York, N. Y. 10013. Subscription orders should be sent to the publisher. *Cellular and Molecular Neurobiology* is abstracted or indexed in Beck Medical Information, Biological Abstracts, Chemical Abstracts, Current Awareness in Biological Sciences, Current Contents, and Excerpta Medica. © 1983 Plenum Publishing Corporation. *Cellular and Molecular Neurobiology* participates in Copyright Clearance Center (CCC) Transactional Reporting Service. The appearance of a code line at the bottom of the first page of an article in this journal indicates copyright owner's consent that copies of the article may be made for personal or internal use. However, this consent is given on the condition that the copier pay the flat fee of \$1.00 per copy per article (no additional per-page fees) directly to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, Massachusetts 01970, for all copying explicitly permitted by Sections 107 or 108 of the U.S. Copyright Law. The CCC is a nonprofit clearinghouse for the payment of photocopying fees by libraries and other registered with the CCC. Therefore, this consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, nor to the reprinting of figures, tables, and text excerpts. 0272-4340/83 \$3.00

Subscription rates:
Volume 3, 1983 (4 issues) \$50.00 (outside the U.S., \$57.00). Price for individual subscribers certifying that the journal is for their personal use, \$25.00 (outside the U.S., \$30.00).
Volume 4, 1984 (4 issues) \$65.00 (outside the U.S., \$74.00). Price for individual subscribers certifying that the journal is for their personal use, \$30.00 (outside the U.S., \$35.00).

Printed in USA.

Cellular and Molecular Neurobiology is published quarterly by Plenum Publishing Corporation, 233 Spring Street, New York, N. Y. 10013. Subscription orders should be addressed to the publisher. *Cellular and Molecular Neurobiology* is abstracted or indexed in Beck Medical Information, Biological Abstracts, Chemical Abstracts, Current Awareness in Biological Sciences, Current Contents, and Excerpta Medica. © 1983 Plenum Publishing Corporation. *Cellular and Molecular Neurobiology* participates in the Copyright Clearance Center (CCC) Transactional Reporting Service. The appearance of a code line at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use. However, this consent is given on the condition that the copier pay the flat fee of \$3.00 per copy per article (no additional per-page fees) directly to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, Massachusetts 01970, for all copying not explicitly permitted by Sections 107 or 108 of the U.S. Copyright Law. The CCC is a nonprofit clearinghouse for the payment of photocopying fees by libraries and other users registered with the CCC. Therefore, this consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale, nor to the reprinting of figures, tables, and text excerpts. 0272-4340/83 \$3.00

Cellular and Molecular Neurobiology

Vol. 3, No. 1

March 1983

CONTENTS

REVIEW AND COMMENTARY

- Primary Astrocyte Cultures—A Key to Astrocyte Function 1
Harold K. Kimelberg

ARTICLES

- Inhibition of Dopamine-Activated Adenylate Cyclase and Dopamine Binding
by Opiate Receptors in Rat Striatum 17
S. Gentleman, M. Parenti, N. H. Neff, and C. B. Pert
- Static Response of Infrared Neurons of Crotaline Snakes—Normal Distribu-
tion of Interspike Intervals 27
Shin-ichi Terashima and Richard C. Goris
- Inactivation of Brain Glutamate Decarboxylase and the Effects of Adenosine
5'-Triphosphate and Inorganic Phosphate 39
Mary P. Meeley and David L. Martin
- Reactivation of Substrate-Inactivated Brain Glutamate Decarboxylase 55
Mary P. Meeley and David L. Martin
- Subclasses of Adenosine Receptors in the Central Nervous System: Interaction
with Caffeine and Related Methylxanthines 69
John W. Daly, Pamela Butts-Lamb, and William Padgett

SHORT COMMUNICATION

- Presence of Immunoreactive Insulin in Neurons Cultured from Fetal Rat
Brain 81
James A. Weyhenmeyer and Robert E. Fellows

- ANNOUNCEMENT 87
-

Cellular and Molecular Neurobiology

Vol. 3, No. 2

June 1983

CONTENTS

REVIEW AND COMMENTARY

- Theory of Electromechanical Effects in Nerve 89
David Gross, Wendell S. Williams, and John A. Connor

ARTICLES

- Responses of Neurons of Canine Area Postrema to Neurotransmitters and Peptides 113
David O. Carpenter, Dean B. Briggs, and Norman Strominger
- The Regulation of Phosphorylation of a Specific Protein in Synaptosomal Fractions from *Drosophila* Heads: The Effects of Light and Two Visual Mutants 127
Leonard E. Kelly
- An Altered Electroretinogram Transient Associated with an Unusual Jump Response in a Mutant of *Drosophila* 143
Leonard E. Kelly
- Osmotic Properties of the Squid Giant Axon and Their Modifications 151
Kunihiko Iwasa
- Asymmetric Distribution of Acetylcholine Receptors and M Channels on Prepyriform Neurons 163
J. M. H. ffrench-Mullen, N. Hori, H. Nakanishi, N. T. Slater, and D. O. Carpenter

SHORT COMMUNICATION

- Sodium-Independent Taurine Binding to Brain Synaptic Membranes 183
Pirjo Kontro and S. S. Oja

- ANNOUNCEMENT 189
-

CONTENTS

ARTICLES

- The Effect of Repeated Electroconvulsive Shock Treatment and Chronic Lithium Feeding on the Release of Norepinephrine from Rat Cortical Vesicular Preparations 191
Richard P. Ebstein, Bernard Lerer, Michael Shlaufman, and Robert H. Belmaker
- Effect of Histronicotoxin on Ion Channels in Synaptic and Conducting Membranes of Electoplax of *Electrophorus electricus* 203
Eva Bartels-Bernal, Edgar Diaz, Rosalina Cadena, Jorge Ramos, and John W. Daly
- Analysis of Carbamazepine Actions in Hippocampal Slices of the Rat 213
T. W. Hood, J. Siegfried, and H. L. Haas
- Calcium-Dependent 4-Aminopyridine Stimulation of Protein Phosphorylation in Squid Optic Lobe Synaptosomes 223
Harish C. Pant, Paul E. Gallant, Rochelle Cohen, Joseph T. Neary, and Harold Gainer
- Biochemical and Physicochemical Properties of the Solubilized S-100 Protein Binding Activity of Synaptosomal Particulate Fractions 239
Rosario Donato
- Simultaneous Determination of Leu-Enkephalin Localization and [^3H] γ -Aminobutyric Acid Uptake in Rat Striatal Cell Cultures 255
Joseph E. Mazurkiewicz and Anne Messer
- Appearance of Acetylcholinesterase Molecular Forms in Noninnervated Cultured Primary Chick Muscle Cells 263
Heinz Popiela, Robert L. Beach, and Barry W. Festoff
- ANNOUNCEMENT 279
-

Cellular and Molecular Neurobiology

Vol. 3, No. 4

December 1983

CONTENTS

In Memory of Tony Gorman: Reflections of a Friend and Colleague	282
ARTICLES	
From Sea Lemons to c-Waves <i>Michael F. Marmor</i>	285
Localization of Neuronal Ca^{2+} Buffering Near Plasma Membrane Studied with Different Divalent Cations <i>Douglas L. Tillotson and Anthony L. F. Gorman</i>	297
Ionic and Spectral Mechanisms of the Off Response to Light in Hyperpolarizing Photoreceptors of the Clam, <i>Lima scabra</i> <i>M. C. Cornwall and Anthony L. F. Gorman</i>	311
Kinetics of Acetylcholine-Activated Cation Channel Blockade by the Calcium Antagonist D-600 in <i>Aplysia</i> Neurons <i>N. Traverse Slater, Helmut L. Haas, and David O. Carpenter</i>	329
Cyclic AMP Enhances Calcium-Dependent Potassium Current in <i>Aplysia</i> Neurons <i>Douglas Ewald and Roger Eckert</i>	345
Inward and Outward Currents in Isolated Dendrites of Crustacea Coxal Receptors <i>Maurizio Mirolli</i>	355
Conversion of Beating to Bursting Pacemaker Activity: Action of Quinidine <i>A. Hermann</i>	371
Recovery of Ca Currents from Inactivation: The Roles of Ca Influx, Membrane Potential, and Cellular Metabolism <i>A. Yatani, D. L. Wilson, and A. M. Brown</i>	381
ANNOUNCEMENTS	397
AUTHOR INDEX TO VOLUME 3	399
SUBJECT INDEX TO VOLUME 3	401
